Streamlining and Efficiencies

WSDOT participates in the Transportation Permit Efficiency and Accountability Committee (TPEAC). TPEAC is a product of the Environmental Permit Streamlining Act, originally authorized by the state legislature in 2001, to examine how the environmental permitting process for transportation projects can be improved. As part of TPEAC, we are involved in a range of efficiency improvements including:

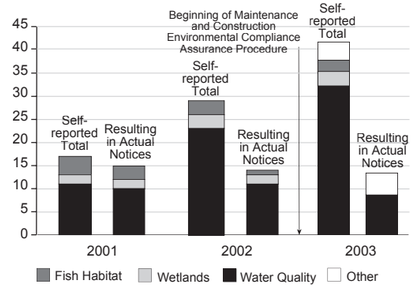
- Developing programmatic permits to simplify resource agency approvals for commonly performed activities
- Launching an information management initiative to improve the permit application process

Complying With Environmental Requirements

WSDOT works with Federal, State, and Local agencies to ensure our activities comply with requirements and conditions of environmental permits and laws. Self-evaluation and reporting is an important part of the compliance process. Works in progress include:

- Developing an Environmental Management System to monitor and track the agency's environmental performance
- Building a system that accurately tracks environmental commitments
- Developing tools to aid the agency in auditing and reporting
- Developing a compliance improvement strategy to address non-compliance issues
- Maintaining a reporting protocol for non-compliance events
- Producing an annual compliance report

Non-Compliance Events
2001-2003



WSDOT self-monitors for "non-compliance events" whether or not such events are taken up as formal "violations" by regulatory agencies or officials. The increase in recorded highway and ferry non-compliance events from 2001 to 2003 is partially explained by an increased emphasis on identifying and tracking non-compliance events. The resulting actual notices from regulatory agencies have remained relatively consistent during the same period.

For more information about WSDOT's Environmental Compliance Assurance Procedures, please see the *Gray Notebook* for the quarter ending March 31, 2003, page 18.

Source: WSDOT Environmental Services Office.

WSDOT's Environmental Performance is Online

For detailed information about the performance of WSDOT's environmental programs, see the *Gray Notebook* Subject Index online at www.wsdot.wa.gov/accountability/graybookindex.htm. Using the subject index, you can scroll to a specific topic and click on an edition to read more information from the *Gray Notebook*.

Measuring Our Performance

Performance measures are important in assessing how well WSDOT is protecting the environment as we build and maintain transportation systems. WSDOT's quarterly performance report, the *Gray Notebook*, contains regular updates of the performance of environmental program areas, including those listed below. WSDOT is looking at additional areas to fully assess our activities.

- Correcting fish barriers
- Construction site erosion control and water quality protection
- Environmental permit compliance
- EIS processing times and concurrence approval rates
- Herbicide use
- Recycling and compost use
- Resource agency liaison program
- Wetland protection

Performance Highlight: Wetland Protection

WSDOT adheres to wetlands protection requirements under Section 404 of the Clean Water Act and numerous state and local environmental provisions. At the same time, WSDOT is working with many others to improve the effectiveness of wetlands protection and replacement requirements through opportunities for "watershed-based mitigation."

Each summer since 1997, WSDOT has worked with The Evergreen State College to sponsor the Wetland Ecology and Monitoring Techniques internship program. Interns receive college course credit to monitor wetland sites throughout the state for 11 weeks. These monitoring activities ensure that a viable wetland replaces the functions of the impacted area in accordance with regulatory standards and permit requirements.

- Twenty-one replacement wetland sites had targets (success standards) to be met in 2003. Five sites met all standards, 14 met some standards, and two met no standards. WSDOT staff biologists implement "course corrections" to achieve environmental commitments on unsuccessful sites.
- Of WSDOT's replacement wetland sites that have completed their monitoring periods since 1988, 49 out of 53 (267 acres) have been judged ecologically successful.

For more information:

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http://www.wsdot.wa.gov/environment/

Washington State Department of Transportation

ENDANGERED SPECIES • WETLANDS • AIR QUALITY • NOISE • HAZARDOUS MATERIALS • WATER QUALITY

FISH PASSAGE • CULTURAL RESOURCES • WATERSHEDS • ENVIRONMENTAL DOCUMENTATION • COMPLIANCE

August 2004

Environmental Challenges and Opportunities

"WSDOT is overseeing a statewide transportation improvement program that creates new opportunities for aligning our citizens' goals for the environment and our citizens' goals for transportation systems."

– Secretary Doug MacDonald

How are Transportation and the Environment related?

The interests of the environment are part of every aspect of WSDOT's work – from planning through construction and into maintenance of the transportation system. This brochure highlights our work in several environmental areas.

Connecting Habitat

Washington State contains dozens of diverse natural habitats. Over 650 different species of fish and wildlife need these habitats and their ecosystems.

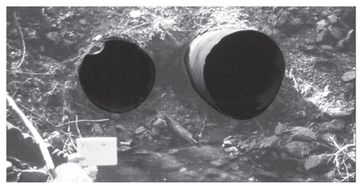
Like people, fish and wildlife depend on the ability to move from place to place for foraging, breeding and raising young.

Constructing and operating facilities for transportation, especially roads, can have significant effects on many wildlife species. WSDOT projects have already responded to these concerns on some projects and the agency has recently proposed a broader policy framework that will:

- Identify where the fish and wildlife habitats are located
- Restore habitat connections where possible by:
  - Building features into planned new transportation projects
  - Constructing stand-alone retrofits where appropriate
  - Considering habitat connections in maintenance and operations practices
- Protect and enhance existing habitat near or on rights-of-way

Connecting Fish Habitat

Moose Creek Under SR 530 Near Darrington in Snohomish County



Before
Two corrugated steel culverts are too high and too steep to provide adequate fish passage.

After
New bottomless culvert replaces the two round steel culverts, eliminating the barrier.

So far, nearly 600 fish barriers on the state highway system have been identified for correction. Eighty-five have been fixed during the construction of a larger highway project, routine maintenance, or through the fish barrier retrofit program. Since 1991, more than 300 acres of stream habitat have been restored.

Protecting and Improving Water Quality

Land development can have a dramatic effect on the natural water cycle and its effect on land surfaces and water bodies. Throughout Washington, land that once was covered with forest and prairie has been replaced by buildings, parking areas, roads and farms. Covering topsoil with hard, impervious surfaces significantly increases surface and/or roadway runoff. Increased runoff can lead to flooding, water pollution, stream bank erosion, and aquatic habitat destruction.

WSDOT corrects and avoids problems created by stormwater runoff by applying physical, structural, and managerial practices that prevent or reduce runoff damage. Examples include retention ponds, biofiltration swales, and road sweeping. WSDOT, in conjunction with the Department of Ecology, is developing new Best Management Practices for highway corridors. Existing highway sections that have no stormwater treatment, or where treatment is substandard, will eventually be improved in conjunction with new highway improvements or as stand-alone retrofits, as funding permits.

Highway stormwater management systems include:

- Providing runoff treatment to meet water quality standards
- Recharging ground water
- Preventing instream erosion
- Controlling the rate and duration of storm flows from state right of way

There are many recent examples where significant water quality benefits have been secured in WSDOT projects and many other near-term opportunities in projects that currently await funding.

Greater Returns for Environmental Investments

WSDOT is working with others to improve the effectiveness of environmental investments through "watershed-based mitigation." This new approach involves looking at watershed needs and improvement opportunities beyond the immediate area of a project. By responding to project effects and mitigation opportunities on a watershed basis, project impacts can be transposed into mitigation opportunities that achieve highly favorable environmental returns for both water quality and species protection.

Mitigation Cost Study

WSDOT evaluated the costs associated with environmental mitigation on various projects to determine which elements contribute what costs to address environmental needs on roadway projects. This study is being used to develop new methods to improve the efficiency of meeting environmental needs on WSDOT projects.

See: www.wsdot.wa.gov/projects/mitigation/

Improving Air Quality

Emissions associated with transportation – from cars, trucks, buses, cargo vessels, ferries and trains – are major sources of local air pollution and greenhouse gases. EPA studies link congested stop-and-go driving to sharp increases of carbon monoxide, dioxide, hydrocarbons and particulates.

WSDOT's efforts to minimize air pollution include fixing the bottlenecks that cause congestion and traffic backups. These projects also support public transit services and improve safety.

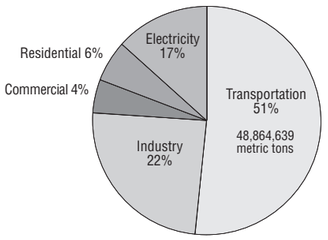
Washington State Ferries (WSF) recently announced that it is taking steps towards cleaner, healthier air by running all ferries on low sulfur diesel fuel, reducing particulate emissions by 30 percent fleet-wide. In addition, WSF is testing ultra-low sulfur diesel fuel and biodiesel made from renewable vegetable oils for emission reductions, performance and engine-wear. WSF is also cutting fuel consumption by revising routes and schedules and by upgrading to more fuel-efficient equipment.

WSDOT is a member of the state agency task force that is advising the West Coast Governors' Global Warming Initiative. This task force is exploring opportunities to constrain carbon dioxide emissions from motor vehicles, such as:

- increasing fuel efficiency,
- converting to less polluting technologies,
- holding down vehicle miles traveled.

One way that other states (such as California and Massachusetts) are moving toward these goals is by adopting Low Emission Vehicle Programs that target tailpipe emissions for steady declines, and force a higher percentage of advance technology vehicles to be sold in their states. See: www.wsdot.wa.gov/publications/folio/AirQuality.pdf

Sources of CO_2 in Washington



Source: Washington State University Energy Program.

Reducing Highway Noise

Traffic can create a lot of noise, sometimes at levels that are unacceptable for nearby neighborhoods. Though WSDOT cannot provide sound barriers everywhere we might like to, federal law and state policy requires that every project that adds through-lanes or significantly realigns roadways must receive a noise evaluation. Outdoor noise impacts (66+ decibels) on locations like homes, schools, churches, day cares and hospitals trigger evaluation of whether noise mitigation (e.g., walls, earth berms) will be meaningful and cost-effective. The result is that WSDOT builds many noise barriers that generally halve residents' perception of traffic noise. From 1963 to 2000 we built approximately 65 miles of noise barriers throughout the state. From 2000 and into the future, we are building even more as a part of our construction projects in urban areas.

In addition to evaluating new noise impacts, WSDOT also plans for retrofitting existing highways with noise barriers. Before 1976 noise was not accounted for on highway projects. Seventy-two locations are currently on the priority list, subject to transportation funding. We try to address the highest priorities first (priority is based on location with the most number of homes at highest noise levels, for reasonable cost).

Understanding Underwater Noise

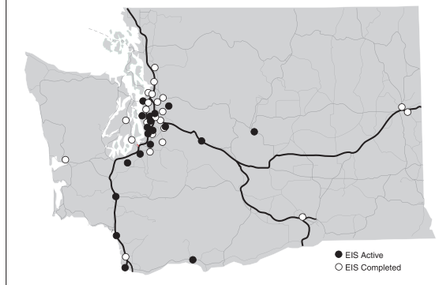
We are also concerned about the effects of underwater noise on fish and diving birds from pile driving for bridge and ferry terminal construction. Though this is a relatively new area of concern, we are working with many others to better understand how construction noise affects underwater species and what we can do to mitigate the effects.

Improving Environmental Documentation

WSDOT and others analyze projects under the National Environmental Policy Act (NEPA) and its state counterpart, the State Environmental Policy Act (SEPA). Some projects lead to preparation of a NEPA Environmental Impact Statement (EIS). The essential features of a project are described and evaluated in the EIS documents. An EIS provides information on potential environmental considerations (not only on water and air quality or endangered species, but also on cultural resources and protected communities) and how those considerations might be addressed. Resource and regulatory agencies, tribes, other governmental entities and the general public are all involved in EIS development.

Following the intent of NEPA and SEPA, WSDOT's goal is to prepare environmental assessment documents that are accurate, informative, readable, and useful to decision makers, community members, legislators, regulators, and local government staff. By providing clear and concise environmental information, we elicit and invite thoughtful, constructive public and agency involvement in project planning and decision-making.

WSDOT Active and Completed EISs



Since 1989, WSDOT has completed 24 NEPA EISs. In addition, 19 EISs are in development (or active status) at this time.

Transportation, Sprawl and Growth Management: Key Challenges

When we talk to Washingtonians about the challenges facing our transportation systems in the next twenty years – as we are doing for the 2005 Update to the Washington Transportation Plan – we often hear about sprawl, quality of life, and the threats to natural ecosystems and salmon. The following discussion is meant to generate discussions regarding citizens' goals to constrain sprawl and the need to prioritize our efforts to address the demands on the state's transportation systems and services.

We at WSDOT appreciate the view that society's transportation practices – especially the automobile's dominance in our culture – present severe challenges to our environment, especially in relation to land use. A recent summary was presented by Northwest Environment Watch in its *Cascadia Scorecard: Seven Key Trends Shaping the Northwest* (2004):

> "The root of the problem is transportation: once scattered, people need far more of it, and they must do most of it by themselves. That makes private vehicles, ideally an accessory to life, into life's organizing principle. Sprawl entails expensive road infrastructure, all but guarantees the congestion of those roads, and then makes transit a more expensive – but less effective – alternative to that congestion. Sprawl locks northwesterners into an auto-dependent lifestyle, with the attendant burden on their pocketbooks, the world's oil fields, and the planet's atmosphere. It endangers health by putting people in harm's way (behind the wheel) nine hours a week and by tainting the air and water with toxic pollutants. It turns walking into recreation rather than transportation, which measurably expands waistlines.
>
> Sprawl also consumes farmland and open space with its massive roads and parking lots. More insidiously, it ruins lowland ecosystems by paving and developing just enough of some watersheds to render them uninhabitable for many aquatic species."

WSDOT knows that confronting this issue is central to creating forward-looking programs for transportation investment. There is no question that efficient transportation systems are essential to economic vitality. There is no question that individualized free market choices about housing, work and life styles are influencing transportation and land use with greater force than either independently influences the other. And there is no question that failure of transportation systems to meet needs that growing communities place upon them can trigger social and environmental costs – including poor land use outcomes.

Indeed, the inability to expand transportation capacity in the face of population and job growth is itself contributing to sprawl as jobs chase people into the suburbs and exurbs, leapfrogging away from denser locations because of clogged and congested transportation corridors serving denser core communities.

Transportation investment must be made in support of growth management strategies or growth management cannot succeed.

Our state's Growth Management Act (GMA) created a framework rooted in local government for reconciling the pressures from growth on the uses of land with the consequent demands for public infrastructure investment. In the decade since the GMA passed, we have seen improved consistency and public engagement in our local land use decisions as a direct result of the coordinated planning required by the law. Major elements of GMA are:

Critical areas. Every city and county in the state is required to designate critical areas – such as wetlands and fish and wildlife habitat – and resource lands – agricultural lands, forestlands, and mineral resource lands – and adopt development regulations to protect them. This fundamental first step in GMA provides cities and counties with the capability to protect critical lands from impacts as growth occurs.

Comprehensive plans. Fast-growing counties and the cities within them are required to create a comprehensive plan that includes elements of projected changes in land use and public facilities. Cities and counties have discretion in their comprehensive plans to make many choices about accommodating growth. Transportation is part of the infrastructure needed to support the land use element of the comprehensive plan. Regional transportation planning organizations certify the transportation chapter of local comprehensive plans.

Urban Growth Areas. Jurisdictions preparing comprehensive plans are also required to designate an Urban Growth Area within which future population growth and infill development is to be encouraged, and outside of which growth should occur only if it is rural in character. The purpose of an Urban Growth Area is to attract and funnel growth to certain core areas, increasing density there while maintaining the rural character of the land outside the Urban Growth Area.

Concurrency. The concept of concurrency exists to ensure that changes in land use are supportable by the necessary transportation infrastructure. Jurisdictions are required to adopt a concurrency regulation that prohibits development if it lowers level of service standards below those specified in the comprehensive plan, unless additional improvements or strategies are made to maintain the standard. The success of channeling growth into urban cores is dependent, in part, upon adequate transportation system capacity (in a variety of modes) to support that growth.

Transportation planning is a critical activity.

Growth management developed in our state out of citizen conviction that the condition of perpetual warfare between "pro"-growth and "anti"-growth forces would impoverish our landscapes, the environment, and the sound economic and social fabrics of our communities. Growth management presents many on-going challenges. One of those challenges is to make good choices for transportation investments. Good choices support mobility, responsibly align demand and capacity, and reinforce growth management plans. Bad choices, or no choices at all, strangle communities and deprive growth management of a crucial underpinning for success.

While there is room for debate in defining the "right areas" for growth to occur as well as the merits of different development patterns, transportation investment must be made in support of growth consistent with locally-adopted plans or else growth will have no reason not to occur outside boundaries adopted under GMA.

Without investment in transportation (and other infrastructure) facilities needed to support managed growth, many of which have been vetted through exhaustive reviews not only in the state transportation planning process but through local and regional decision-making (see, for example, the Puget Sound Regional Council's *Destination 2030*), sprawl and decreased development density are likely consequences. We believe transportation investments, including balanced investments in new capacity for all transportation modes, are essential to achieving success for the growth management strategies that have been adopted in this state. Our efforts to update the 20-year system plan will include a hard look at these issues.

Growth management is just one of the purposes transportation investment must serve.

Transportation investments to assure efficient and effective transportation corridors for moving people and goods between cities, across the nation, and to other countries is essential to the economic vitality of modern communities. We have to make transportation investments that maintain and improve intercity routes. Investments on crucial state-level corridors like I-5, I-90, and even U.S. 12 to Walla Walla are sensitive to many complicated and crucial issues. Confusing these transportation purposes and needs with the issues of "sprawl" does not assist the quality of the requisite investment decision-making.

Transportation systems must be more efficient.

How can we use every available tool to help alleviate the crisis of imbalance between demand and capacity on urban transportation systems that wastes time and fuel, exacerbates air emissions, exhausts the patience of citizens and drives up the costs of business?

Clearly, we need to invest in making our transportation systems more efficient. Inefficient transportation systems actually help promote sprawl and other negative environmental results. In an era of fierce fiscal constraints, immediate priorities for the update to the Washington Transportation Plan will likely include:

- Operational efficiency strategies such as ramp metering, incident response, and traveler information, which help to increase system throughput.
- Smaller scale investments to correct bottlenecks and chokepoints in existing corridors, restoring the needed capacity robbed by congestion (see sidebar).
- A commitment to investment that preserves and extends the useful life of transportation investments already in the public inventory in order to avoid worsening the demand/capacity imbalance by loss of current assets.
- Laying the foundation in every possible way for the introduction of pricing mechanisms that will encourage more efficient use of transportation assets.
- Working with cities and counties to connect and complete street networks that move people and goods more efficiently within urban and urbanized areas.

Why Congestion is Bad Social Economics

Physical bottlenecks are locations where the physical capacity is restricted with flows from upstream sections being funneled into smaller downstream segments. When we think of water being carried through a pipe, we say you can only put a certain amount of water through a pipe of a given size. That capacity stays constant no matter how much water backs up behind it – it always carries the same amount. But a roadway is actually very different from a water pipe: when excess flows from the "upstream" segment cause drivers to bunch and congestion to start forming, the roadway capacity actually shrinks. In fact it can shrink to carry only half of its original capacity.

This is one of the reasons the economic price of congestion is so high. Congestion robs part of the value of highway investment by causing the highway's capacity to be diminished below the capacity it is capable of conveying. Congestion, in other words, creates inefficiency by actually reducing the performance capacity of an existing infrastructure asset.

In addition to capacity reduction, other economic and environmental inefficiencies caused by congestion include the value of time lost by commuters and freight haulers sitting in traffic, wasted fuel, and excess emissions.